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# **PSORIASIS- A COMPREHENSIVE REVIEW ON CONVENTIONAL AND ALTERNATIVE APPROACH TO TREATMENT**

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**Abstract:** Psoriasis is fundamentally an inflammatory skin condition with reactive abnormal epidermal differentiation and hyperproliferation affecting 2-3 % of world's population. Psoriasis is a chronic, immune-mediated inflammatory, proliferative skin disorder that predominantly involves the skin, nails, and joints. Psoriasis is a common skin condition that speed up the production of skin cells. During an active disease state, a basic inflammatory mechanism is often involved. This article reviews several of the researched natural approaches to psoriasis treatment. An alternative natural therapy provides some options for increasing safety and efficacy in the management of psoriasis.

**Keywords:** Immune-Mediated Inflammatory Disorder, Natural Therapies, Proliferative Skin Disorder, Efficacy.

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**Introduction:** Psoriasis is a common T-cell-mediated immune disorder characterized by circumscribed, red, thickened plaques with an overlying silver-white scale. It causes cells to stagnate on the surface of the skin. Psoriasis is a chronic skin condition caused by an overactive immune system. The extra skin cells form itchy scales and red patches which are painful. The symptoms are inflammation, and flaking, thick red patches of skin. But if you have psoriasis, the T cells attack healthy skin cells by mistake, as if to heal a wound or to fight an infection. Overactive T cells also trigger increased production of healthy skin cells, more T cells and other white blood cells, especially neutrophils. These travel into the skin causing redness and sometimes pus in pustular lesions. Dilated blood vessels in psoriasis-affected areas create warmth and redness in the skin lesions. The process becomes an ongoing cycle in which new skin cells move to the outermost layer of skin

Factors that trigger psoriasis include infections, such as strep throat or skin infections, skin injury, like cut or scrape, a bug bite, or a severe sunburn, stress, smoking, heavy alcohol consumption, vitamin D deficiency, certain medications mainly including lithium, prescribed medicines for high blood pressure medications such as beta blockers, antimalarial drugs etc. Psoriasis is a chronic inflammatory skin disease which is characterized by hyperproliferation and unusual distinction of epidermal keratinocytes. Most of the therapies have a limited efficacy and may cause a number of side effects like cutaneous atrophy, toxicity of organs, carcinogenicity, and broadband immunosuppression. It would be desirable to apply herbal products as an alternative treatment for psoriasis with limited side effects.

Psoriasis is a chronic autoimmune human skin disorder that is characterized by excessive proliferation of keratinocytes, scaly plaques, severe inflammation [1]. A wide range of conventional medical therapies to treat psoriasis is established, from topical therapies and systemic medications to phototherapy or combinations [2].

However, most of these therapies cause a number of side effects, inconvenience, cutaneous deterioration, organ toxicity (hepatotoxicity, nephrotoxicity), carcinogenicity and broadband immunosuppression [3],[4]. In turn, a short-term treatment of psoriasis causes its remission after finishing the treatment. Moreover, psoriasis is often accompanied by other diseases, such as depressive illness, cardiovascular disease, and a seronegative arthritis known as psoriatic arthritis [5]. Therefore, the alternative treatments for psoriasis causing fewer side effects would be desirable. It seems that several herbal drugs can meet these requirements and proved as promising new agents for psoriasis treatment [6].

**Epidemiology:** The worldwide prevalence of psoriasis is estimated to be approximately 2–3% [7]. It is the disease highly manifestation in the polar areas of the world. In a diverse country such as India, the prevalence of psoriasis may vary from region to region due to variable environmental and genetic factors. The higher prevalence in males has been reported with a peak age at thirties and forties of life [8,9]. In one of the larger studies from Northern India, point prevalence of pediatric psoriasis was estimated to be 0.0002% [10]. The peak age at onset among boys is in the 6–10 years age group compared to girls in 11–15 years age group [11].

**Co-morbidities:** Psoriasis is associated with several co-morbidities, including cancer, depression, low quality of life, increased cardiovascular risk, type 2 diabetes mellitus, metabolic syndrome disease and psoriatic arthritis. Phototherapy and immunosuppressive therapy can increase the risk of non-melanoma skin cancer [12].

**Pathophysiology:** Skin is a primary lymphoid organ with antigen presenting cells circulating T lymphocytes. All these cells workout by means of cytokine secretion and respond through stimulus by bacteria, chemical, ultraviolet (UV) light and other irritating factors. The prolonged cytokine production leads to a pathological state such as psoriasis. Initially, immature dendritic cells in the epidermis stimulate T-cells from lymph nodes in response to

antigen stimulation. Psoriasis is considered a Th1-dominant disease due to the increase in cytokines of the interferon gamma (IFN- $\gamma$ ), IL-2 and interleukin 12 (IL-12) – found in psoriatic plaques. Ultimately, T cells migrate to the skin, where they accumulate around dermal blood vessels. This result in the formation of acute psoriatic lesions. Vascular endothelial growth factor (VEGF) and interleukin-8 released from keratinocytes may contribute to the vascularization seen in psoriasis. Dendritic cells appear to be involved in the pathogenesis of psoriasis. One type of dendritic cell involved is the Langerhans cells, the outermost sentinel of the immune system that recognizes and captures antigens, migrates to local lymph nodes and presents them to T cells. The activation of T lymphocytes releases pro-inflammatory cytokines such as TNF- $\alpha$  that lead to keratinocyte proliferation. This hyperproliferative response produces the typical erythematous scaly plaques of psoriasis.

**Tropical Treatment:** Curcumin gel yielded 90-percent resolution of plaques in 50 percent of patients within 2-6 weeks. Curcumin was found to be twice as effective as calcitriol cream. The mechanism of curcumin is as a selective phosphorylase kinase inhibitor and reduces inflammation. A controlled trial of *Aloe Vera* extract cream (0.5%) in 60 patients for 4-12 months demonstrated a significant clearing of psoriatic plaques (82.8%). Several topical treatments for psoriasis may provide benefit, including calcipotriene (Dovonex a synthetic vitamin D<sub>3</sub> analogue), *Berberis aquifolium* cream (10%) , curcumin gel (1%), *Aloe Vera* and a flavonoid-rich ointment (Flavsolve).

**Herbal Treatment:** A Chinese herbal formula (*Herose*) *Rhizoma Zingiberis*, *Radix Salviae miltiorrhizae*, *Radix Astragali*, *Ramulus Cinnamomi*, *Radix Paeoniae alba*, *Radix Codonopsis pilosula*, and *Semen Coicis*. Ethanol extracts from *Alpinia galanga*, *Curcuma longa* and *Annona squamosa* showed effects on the downregulation of NF- $\kappa$ B signalling molecules in the HaCaT keratinocyte cell line, reflecting their potential use in treating diseases with inflammation and hyperproliferation such as psoriasis [13]. *Copaifera langsdorffii oleoresin*, also known as *Copaiba balsam*, exhibits an anti-inflammatory activity through inhibiting NF- $\kappa$ B nuclear translocation and secreting proinflammatory cytokines. Lavender oil is proven to reduce swelling and redness. Tea Tree Oil is clinically proven to act as an anti-septic that fights germs including fungus and bacteria. Tea Tree Oil has been shown to be more effective than benzoyl peroxide at reducing infection. *Kigelia africana* tree Cream is a natural botanical formulation specifically designed to treat skin conditions including acne, psoriasis, eczema, age spots, wrinkles, scars, sun damage and dryness.

Water-soluble polysaccharide (GP-I) purified from *Gynostemma pentaphyllum* showed a significant antiproliferative effect and decreased TNF- $\alpha$ , a vital proinflammatory cytokine in psoriasis. The extracts of *Acanthus mollis*, *Achillea ligustica*, *Artemisia arborescens* and *Inula viscosa* inhibited 5-LOX and COX-1 activity as well as NF- $\kappa$ B activation. Moreover, *A. ligustica*, *A. arborescens*, and *A. mollis* increased the biosynthesis of 15(S)-HETE, an anti-inflammatory eicosanoid. The topical application of a mixture of herbal extracts (*Tinospora cordifolia*, *Curcuma longa*, *Celastrus paniculatus*, *Aloe vera*) lead to the downregulation of overexpressed

cytokines in mice, initially induced with psoriasis-like dermatitis through topical application of imiquimod. The ethanolic extract of *Aloe vera* leaf gel showed antipsoriatic activity by a significant differentiation of the epidermis, seen as orthokeratosis. The ethanolic extract of *Nigella sativa* seeds extract produced a significant epidermal differentiation from its degree of orthokeratosis. Tuhuai extract reduced epidermal hyperplasia and inflammation in normal hairless mice. Baicalin isolated from *Scutellaria baicalensis* acts by inhibiting inflammatory reactions and inducing the differentiation of keratinocytes. The flavonoid quercetin from the rhizome of *Smilax china* shows significant orthokeratosis, reduction in epidermal thickness. The methanolic extract of *Kigelia africana* stem shows high anti-psoriatic activity than the leaves and fruit methanolic extracts of *Kigelia africana*. The raw honey was applied on the psoriatic foot with glycerine dressing after 8 weeks the psoriatic foot is improved [14].

**Lifestyle Factors:** Lifestyle factors such as physical exercise, cigarette smoking and alcohol consumption will increase the severity of psoriasis. Finally, psychological issues such as anxiety, depression should be properly counselled. Stress management is beneficial for the patients of psoriasis. Patients with psoriasis reported physical discomfort, impaired emotional functioning, a negative body and self-image, and limitations in daily activities, social contacts and (skin-exposing) activities, and work.

**Treatment with Vitamin D:** Keratinocytes in the epidermis convert 7-dehydrocholesterol to vitamin D<sub>3</sub> in the presence of UVB. Sunlight, UVB phototherapy, oral calcitriol and topical vitamin D analogs are effective.

**Diet:** Psoriasis, an inflammatory disorder, requires an anti-inflammatory diet. The patients need an anti-inflammatory diet consists of fish, nuts, seeds, olive oil, whole grains, legumes, vegetables, and fruits and it should be free of saturated animal fats, trans fats, fried and processed foods, poor quality oils and refined carbohydrates.

**Homeopathy:** Homeopathy is safe and enhances the energy to expel psoriasis without any side effects. These medicines should be taken under the advice and diagnosis of a qualified Homeopathy physician.

**Risk factors:** Development of psoriasis involves interaction of multiple genetic risk factors with environmental factors, such as beta-hemolytic streptococcal infection, HIV, stress, and medications. In addition, there is evidence that alcoholism, cigarette smoking, obesity, type 2 diabetes mellitus and metabolic syndrome increase risk for developing psoriasis

**Discussion:** Psoriasis is a dreadful disease affecting physical, mental and social status of the patients. This complex disease has led the development of various biological treatments. The conventional approach to psoriasis consists of applying immunosuppressant drugs, oral retinoids, UV light, topical and/or oral corticosteroids, biological agents. Although these treatments can be highly effective at controlling the disease. A review of alternative natural

therapies provides hope for increasing efficacy in the management of psoriasis. This review will prove to be an new book for patients of psoriasis .

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